Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

**Carbon nanotube twist-spun yarns cold cathodes: properties and application** ZAKHIDOV ALEXANDER[1], ZHANG MEI, UTD, nanotech inst., ALEXANDER OBRAZTSOV, MSU, Physics Department, ANVAR ZAKHIDOV, RAY BAUGHMAN, UTD, nanotech inst., UTD, NANOTECH INST. COLLABORATION, MSU, PHYSICS DEPARTMENT COLLABORATION — Multiwall carbon nanotube (MWCNT) twist-spun yarns are the novel type of material with unique mechanical and electrical properties [1]. In this study we present the study of electron field emission of these yarns. It was found that FE from MWCNT yarns are very uniform with threshold voltage as low as 1 V/um. After conditioning process we have found that FE properties considerably self-improved. The origin of this self improving process is discussed in terms of influence of electrostatic force which tousles the MWCNT on the yarn. The combination of advanced mechanical and field electron emission properties of MWCNT make them ideal candidate to use as a cold cathode for vacuum devices. The lateral electron emission from MWCNT twist-spun yarns may be suitable for application in flat panel displays and lighting elements. The prototype of the indicator based on MWCNT yarn was successfully demonstrated. [1]. M. Zhang, K. R. Atkinson, R. H. Baughman: Science 306, 1358 (2004).

[1]membership pending

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Date submitted: 20 Nov 2006 Electronic form version 1.4